

What is claimed is:

1. A porous reaction-bonded magnesia body.
2. The body of claim 1 which has a porosity greater than about 30%.
3. The body of claim 1 which has a mean pore size greater than about 1 micron.
4. A membrane device comprising the body of claim 1 as a support for a permselective membrane.
5. The device of claim 4 in which the membrane device is suitable for gas separations
6. The device of claim 5 in which the permselective membrane is selected from the group comprising dense metallic and ion transport membranes.
7. The body of claim 1 in which the structure of the body is selected from the group of configurations containing tubular, planar, hollow fiber, and multiple passageway monolith configurations.
8. A porous reaction-bonded magnesia body formed by sintering a green body containing coarse magnesia grains and reactive grains of an inorganic binder precursor.
9. The body of claim 8 for which a reaction bond is formed from the reaction of grains of an element admixed with the coarse magnesia grains.
10. The body of claim 8 in which the magnesia grains have a mean particle size in the range of about 5 to 200 microns.
11. The body of claim 9 in which the element is selected from the group comprising aluminum, silicon, titanium, zirconium, and mixtures thereof.
12. The body of claim 8 in which the green body contains silicon grains and the reaction bond is forsterite.

13. The body of claim 8 in which the green body contains aluminum grains and the reaction bond is spinel.

14. The body of claim 8 that has a volume change from the unsintered green body of less than about five percent.

15. A method for making a porous reaction-bonded magnesia body, comprising:

Making a mixture containing at least coarse magnesia grains and grains of an inorganic reactive binder precursor;

Forming the mixture into a desired shape and drying to obtain a green body;

Firing the green body to a temperature sufficient to react the reactive inorganic binder precursor; and

Cooling the reaction-bonded body.